

论著·公共卫生

基于上海社区老年人群队列的心血管疾病和恶性肿瘤的危险因素流行特征分析

李 萍^{1,2}, 蒋惠如², 叶梦月³, 王雅玉^{1,2}, 陈潇雨⁴, 袁安彩², 徐文杰⁵, 戴慧敏⁶, 陈 曦⁷, 闫小响⁸, 涂圣贤², 郑元琦⁷, 张 薇^{2,9#}, 卜 军^{2#}

1. 蚌埠医科大学公共卫生学院, 蚌埠 233030; 2. 上海交通大学医学院附属仁济医院心内科, 上海 200127; 3. 浙江省宁波市杭州湾医院体检中心, 宁波 315336; 4. 上海交通大学医学院附属仁济医院临床研究中心, 上海 200127; 5. 上海市浦东新区合庆社区卫生服务中心中医科, 上海 201201; 6. 上海市浦东新区潍坊社区卫生服务中心全科医学科, 上海 200122; 7. 福建省三明市第一医院心内科, 三明 365000; 8. 上海交通大学医学院附属瑞金医院心内科, 上海 200025; 9. 上海市肿瘤研究所流行病学研究室, 上海 200032

【摘要】目的· 基于上海社区老年人群队列, 分析心血管疾病和恶性肿瘤的危险因素流行特征。**方法**· 选择2019年2—8月建立的上海社区老年人群队列 (17 948人) 为研究对象。根据基线调查时自我报告的有无肿瘤和/或心血管疾病将其分为4组, 即无肿瘤无心血管疾病组、心血管疾病单患组、肿瘤单患组和肿瘤心血管疾病共患组。收集并比较4组受试者在人口学特征与生理指标、日常生活习惯 (吸烟、饮茶、饮用咖啡、饮用碳酸饮料、饮酒、久坐时长、体力活动水平、睡眠质量)、既往疾病史、心理状况 (抑郁、焦虑)、膳食达标情况等方面的差异。**结果**· 研究对象中, 有60.1%的肿瘤患者合并心血管疾病。4组受试者在年龄、性别、教育水平、退休前职业、腰围、臀围和体质指数间差异具有统计学意义 (均 $P<0.05$)。与无肿瘤无心血管疾病组相比, 心血管疾病单患组、肿瘤单患组、肿瘤心血管疾病共患组患者在吸烟、高体力活动水平的比例较低 (均 $P<0.05$), 久坐时长 >4 h/d、睡眠质量差的比例较高 (均 $P<0.05$); 心血管疾病单患组、肿瘤心血管疾病共患组患者合并高脂血症、外周血管疾病、内分泌系统疾病、呼吸系统疾病、泌尿系统疾病、消化系统疾病的比例较高 (均 $P<0.05$), 抑郁、焦虑比例亦较高 (均 $P<0.05$)。同时, 与无肿瘤无心血管疾病组相比, 心血管疾病单患组患者在禽肉类、鱼类、水果和液态奶的达标率较低 (均 $P<0.05$)。4组中仅蔬菜摄入量的达标率均超过了50%, 禽肉类、鱼类、水果、液态奶、薯类的达标率均低于20%。**结论**· 上海社区老年人群中, 超过一半的恶性肿瘤患者合并有心血管疾病。心血管疾病、肿瘤以及肿瘤心血管疾病共患的人群普遍存在不健康的日常生活习惯。社区老年人群多种食物的摄入量未达《中国居民膳食指南》推荐水平。

【关键词】 恶性肿瘤; 心血管疾病; 危险因素; 流行特征; 队列

【DOI】 10.3969/j.issn.1674-8115.2024.05.010 **【中图分类号】** R181.2 **【文献标志码】** A

Analysis of epidemiological characteristics of risk factors for cardiovascular diseases and malignant tumors based on the Shanghai community elderly cohort

LI Ping^{1,2}, JIANG Huiru², YE Mengyue³, WANG Yayu^{1,2}, CHEN Xiaoyu⁴, YUAN Ancai², XU Wenjie⁵, DAI Huimin⁶, CHEN Xi⁷, YAN Xiaoxiang⁸, TU Shengxian², ZHENG Yuanqi⁷, ZHANG Wei^{2,9#}, PU Jun^{2#}

【基金项目】 上海市专业技术服务平台建设项目 (22DZ2292400); 上海市卫生健康委员会新兴交叉领域研究专项 (2022JC013); 上海市卫生健康委员会重中之重研究中心项目 (2023ZZ02021); 上海市卫生健康委员会临床重点专科建设项目 (SHSLCZDK06204); 上海市加强公共卫生体系建设三年行动计划 (2023—2025年) 重点学科建设项目 (GWVI-11.1-26); 上海交通大学医学院高水平地方高校创新团队 (SHSMU-ZDCX-2021-0700); 浦东新区卫生健康委员会卫生科技项目 (PW2023E-02); 浦东新区卫生系统学科带头人培养计划 (PWRd2022-06); 浦东新区卫生健康委员会学科建设 (PWYq2020-03); 三明市科技计划联合资助项目 (2022-S-56)。

【作者简介】 李 萍 (1998—), 女, 硕士生; 电子邮箱: lp239600@163.com。

【通信作者】 张 薇, 电子邮箱: zhangwei050080@renji.com。卜 军, 电子邮箱: punjun310@hotmail.com。[#]为共同通信作者。

【Funding Information】 Professional Technical Service Platform Project of Shanghai (22DZ2292400); Emerging Interdisciplinary Research Project of Shanghai Municipal Health Commission (2022JC013); Project of Shanghai Health Commission Key Research Center (2023ZZ02021); Key Clinical Specialty of Shanghai Municipal Health Commission (SHSLCZDK06204); Key Discipline Construction Project of Shanghai Three-year Action Plan to Strengthen Public Health System Construction (2023—2025) (GWVI-11.1-26); Innovative Research Team of High-level Local Universities in Shanghai (SHSMU-ZDCX-2021-0700); Health Science and Technology Research Project of Pudong New Area Health Commission (PW2023E-02); Discipline Leader Training Program of Health System in Pudong New area (PWRd2022-06); Discipline Construction of Pudong New Area Health Commission (PWYq2020-03); Jointly Funded Projects of Science and Technology Plan in Sanming City (2022-S-56)。

【Corresponding Author】 ZHANG Wei, E-mail: zhangwei050080@renji.com. PU Jun, E-mail: punjun310@hotmail.com. [#]Co-corresponding authors.



1. School of Public Health, Bengbu Medical University, Bengbu 233030, China; 2. Department of Cardiology, Renji Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai 200127, China; 3. Physical Examination Center, Ningbo Hangzhou Bay Hospital, Zhejiang Province, Ningbo 315336, China; 4. Center for Clinical Investigation, Renji Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai 200127, China; 5. Department of Traditional Chinese Medicine, Heqing Community Health Service Center of Pudong New Area, Shanghai 201201, China; 6. Department of General Practice, Weifang Community Health Service Center of Pudong New Area, Shanghai 200122, China; 7. Department of Cardiology, Sanming First Hospital, Fujian Province, Sanming 365000, China; 8. Department of Cardiovascular Medicine, Ruijin Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai 200025, China; 9. Department of Epidemiology, Shanghai Cancer Institute, Shanghai 200032, China.

[Abstract] **Objective** To analyze the epidemiological characteristics of risk factors for cardiovascular diseases and malignant tumors based on the Shanghai community elderly cohort. **Methods** The study subjects were selected from the Shanghai community elderly cohort established from February to August 2019, with a total of 17 948 people. The study subjects were divided into 4 groups according to self-reported presence or absence of tumors and/or cardiovascular diseases during the baseline survey: tumor-free and non-cardiovascular disease group, single cardiovascular disease group, single tumor group and tumor cardiovascular disease co-occurrence group. The differences among the four groups of subjects were collected and compared in terms of demographic characteristics and physiological indicators, daily living habits (smoking, drinking tea, drinking coffee, drinking carbonated drink, drinking alcohol, sedentary time, physical activity level and sleep quality), past medical history, psychological status (depression and anxiety) and dietary compliance. **Results** Among the study subjects, 60.1% of tumor patients were complicated with cardiovascular diseases. The differences among the four groups of subjects in age, gender, educational level, pre-retirement occupation, waist circumference, hip circumference and body mass index were statistically significant (all $P < 0.05$). Compared with the tumor-free and non-cardiovascular disease group, the single cardiovascular disease group, single tumor group and tumor cardiovascular disease co-occurrence group all exhibited lower proportions of smoking and high physical activity levels (all $P < 0.05$), and higher proportion of sedentary time exceeding 4 h/d and poor sleep quality (all $P < 0.05$); the proportion of subjects with past medical histories including hyperlipidemia, peripheral vascular disease, endocrine system disease, respiratory system disease, urinary system disease and digestive system disease of the single cardiovascular disease group and the tumor cardiovascular disease co-occurrence group was higher (all $P < 0.05$), and the proportion of subjects with depression and anxiety was also higher (all $P < 0.05$). Furthermore, compared with the tumor-free and non-cardiovascular disease group, the single cardiovascular disease group had lower compliance rates of poultry, fish, fruit and liquid milk (all $P < 0.05$). Among the four groups, only the compliance rate of vegetable intake exceeded 50%, while the compliance rates of poultry, fish, fruit, liquid milk and tubers were all below 20%. **Conclusion** In the elderly population of Shanghai communities, over half of malignant tumor patients are concomitant with cardiovascular diseases. Unhealthy daily habits are prevalent among those with cardiovascular diseases, tumors and tumor-cardiovascular disease co-occurrence. The intake of many foods in the elderly of the community do not reach the levels recommended by Chinese Dietary Guidelines.

[Key words] malignant tumor; cardiovascular disease; risk factor; epidemiological characteristics; cohort

目前, 心血管疾病 (cardiovascular disease, CVD) 和恶性肿瘤是全球范围内的两大主要死亡原因^[1-2]。世界卫生组织 (World Health Organization, WHO) 最新的数据显示, 每年约有 1 790 万人死于 CVD、930 万人死于癌症^[3]。该两类疾病的高死亡率给社会带来了极大的经济负担, 且已成为当前亟待解决的公共卫生领域问题之一^[1-3]。

尽管 CVD 和恶性肿瘤是两种独立的疾病, 但二者具有潜在的相互作用和相似之处, 这使得 CVD 与肿瘤共病的现象越来越常见^[4]。随着肿瘤早期筛查、诊断及治疗技术的不断发展, 肿瘤患者的生存期得以延长, 同时因肿瘤治疗手段导致的 CVD 并发症也有所增加^[5]。一项基于社区动脉粥样硬化风险 (atherosclerosis risk in communities study, ARIC) 的前瞻性研究^[6]发现, 成人癌症幸存者患 CVD 的风险较未患癌症者增加了 37%。同时, CVD 患者罹患癌

症的风险也会增加。意大利的一项研究^[7]表明, 与未患心力衰竭者相比, 心力衰竭患者的癌症发病率和死亡率均较高; 而动脉粥样硬化性心血管疾病患者相较于无心血管疾病者, 其罹患癌症的风险增加了 20%^[8]。

既往国内外的大规模流行病学研究多基于肿瘤或 CVD, 而对肿瘤和 CVD 共患的特征分析相对较少。恶性肿瘤与 CVD 之间存在着一些共同危险因素, 如中心性肥胖、吸烟、饮酒、低体力活动、睡眠质量差、不健康膳食等, 其对肿瘤与 CVD 共患的预防和规范管理十分重要。基于此, 本研究通过对上海社区老年人群队列的基线调查数据开展横断面研究, 分析并比较上海社区老年人群的恶性肿瘤、心血管疾病单患及共患组危险因素的流行特征, 以期为 CVD—恶性肿瘤多学科协防共管的一级、二级预防策略的制定提供有价值的线索和参考依据。

1 对象与方法

1.1 研究对象及其分组

本研究对象为2019年2—8月建立的上海社区老年人群队列的全部成员,共计17 948例。该队列研究的具体设计详见文献[9]。根据基线调查时研究对象自我报告的CVD及肿瘤患病情况,将其分为无肿瘤无心血管疾病组、心血管疾病单患组、肿瘤单患组、肿瘤心血管疾病共患组共4组。其中,CVD包括高血压、冠心病(包括心绞痛、心肌梗死、心律失常、缺血性心肌病型)、脑卒中(包括出血性脑卒中、缺血性脑卒中、蛛网膜下腔出血、短暂性脑缺血发作)、心房颤动和心力衰竭。

1.2 资料收集及分析

1.2.1 人口学特征与生理指标 收集受试者的人口学特征与生理指标。其中,前者包括年龄、性别、教育水平、退休前职业;后者由社区卫生服务中心的医师测量获得,包括身高、体质量、腰围、臀围。根据《基层心血管病综合管理实践指南2020》^[10],将男性腰围 ≥ 90 cm、女性腰围 ≥ 85 cm定义为中心性肥胖。

1.2.2 日常生活习惯 收集受试者的日常生活习惯,包括吸烟、饮茶、饮用咖啡、饮用碳酸饮料、饮酒、久坐时长、体力活动水平、睡眠质量。其中,吸烟定义为每日至少1支,饮茶为每周至少3次,饮用咖啡、饮用碳酸饮料为每周至少1杯,饮酒为每周至少1次,且上述指标均需连续6个月以上;根据国际体力活动问卷(International Physical Activity Questionnaire, IPAQ)收集受试者久坐时长和体力活动水平,且后者被义为低、中、高共3个水平;使用匹兹堡睡眠质量指数(Pittsburgh Sleep Quality Index, PSQI)量表收集受试者的睡眠信息,根据“近1个月,总的来说,您认为自己的睡眠质量如何”将睡眠质量定义为好、差共2个水平。

1.2.3 既往疾病史 收集受试者自我报告的既往疾病史,包括高血压、冠心病、脑卒中、心房颤动、心力衰竭、高脂血症、外周血管疾病、内分泌系统疾病、恶性肿瘤、呼吸系统疾病、泌尿系统疾病、消化系统疾病。

1.2.4 心理状况 分别使用患者健康问卷-9(Patient Health Questionnaire-9, PHQ-9)和7项广泛性焦虑障碍量表(Generalized Anxiety Disorder 7-item, GAD-

7)收集受试者的心理状况(抑郁、焦虑)并进行评估。PHQ-9量表总分为0~27分,GAD-7量表总分为0~21分。在本研究中,我们将PHQ-9评分在0~4分定义为无抑郁症状、5~27分定义有抑郁症状;将GAD-7评分在0~4分定义为无焦虑症状、5~21分定义为有焦虑症状。

1.2.5 膳食达标情况 采用膳食频率调查表收集受试者的蔬菜、禽肉类、鱼类、水果、液态奶、薯类摄入情况。基于《中国居民膳食指南(2022)》^[11],各类膳食的推荐摄入量标准如下:蔬菜摄入量 ≥ 300 g/d、禽肉类摄入量300~500 g/周、鱼类摄入量300~500 g/周、水果摄入量200~350 g/d、液态奶摄入量 ≥ 300 g/d、薯类摄入量50~100 g/d,满足上述标准则定义为膳食摄入量达标。

1.3 统计学方法

使用SPSS 27.0软件对数据进行统计分析。定量资料采用 $\bar{x} \pm s$ 表示,组间比较采用方差分析(ANOVA);定性资料用 n (%)表示,组间比较采用 χ^2 检验或Fisher精确检验(当任意1组理论频数小于5时使用)。所有统计学检验均采用双侧检验, $P < 0.05$ 表示差异具有统计学意义。

2 结果

2.1 上海社区老年人群的人口学特征与生理指标分析

在17 948例受试者中,根据其自我报告显示,1 203人(占6.7%)患有肿瘤,11 246人(占62.7%)患有CVD,且有60.1%的肿瘤患者合并有CVD。对4组受试者的人口学特征与生理指标进行分析,结果(表1)显示,年龄、性别、教育水平、退休前职业、腰围、臀围和体质量指数(body mass index, BMI)的组间差异具有统计学意义(均 $P < 0.05$);其中,与无肿瘤无心血管疾病组相比,肿瘤心血管疾病共患组患者的年龄、臀围、BMI较大,且女性、教育水平在小学及以下、退休前职业为科技人员/医务人员/教师、中心性肥胖的比例较高(均 $P < 0.05$)。

2.2 上海社区老年人群的日常生活习惯分析

对4组受试者的日常生活习惯进行分析,结果(表2)显示,吸烟、饮茶、饮用碳酸饮料、久坐时

表1 上海社区老年人群的人口学特征与生理指标分析

Tab 1 Analysis of demographic characteristics and physiological indicators of Shanghai community elderly cohort

Characteristic	Tumor-free and non-cardiovascular disease group (n=6 222)	Single cardiovascular disease group (n=10 523)	Single tumor group (n=480)	Tumor cardiovascular disease co-occurrence group (n=723)	F/χ^2 value	P value
Age/year	66.9±5.8	69.0±6.2 ^②	68.2±6.4 ^②	69.9±6.5 ^②	175.135	0.000
Gender/n(%)					31.431	0.000
Male	2 898 (46.6)	4 880 (46.4)	230 (47.9)	260 (36.0) ^②		
Female	3 324 (53.4)	5 643 (53.6)	250 (52.1)	463 (64.0) ^②		
Educational level/n(%)					126.112	0.000
Primary school and below	1 840 (29.6)	3 931 (37.4) ^②	137 (28.5)	265 (36.7) ^②		
Middle school/high school	4 030 (64.8)	6 076 (57.7) ^②	305 (63.5)	405 (56.0) ^②		
College and above	352 (5.7)	516 (4.9) ^②	38 (7.9) ^②	53 (7.3)		
Pre-retirement occupation/n(%) ^①					31.485	0.008
Worker	2 095 (33.7)	3 352 (31.9) ^②	183 (38.1) ^②	233 (32.2)		
Farmer	3 364 (54.1)	5 904 (56.1) ^②	230 (47.9) ^②	384 (53.1)		
Technology professional/medical professional/teacher	275 (4.4)	434 (4.1)	28 (5.8)	47 (6.5) ^②		
Administrative staff	322 (5.2)	564 (5.4)	26 (5.4)	44 (6.1)		
Individual business enterprise	91 (1.5)	143 (1.4)	9 (1.9)	9 (1.2)		
Others	75 (1.2)	123 (1.2)	4 (0.8)	6 (0.8)		
Waist circumference/n(%) ^①					520.279	0.000
Normal	4 356 (76.0)	5 814 (58.9) ^②	343 (79.6)	381 (57.7) ^②		
Central obesity	1 378 (24.0)	4 053 (41.1) ^②	88 (20.4)	279 (42.3) ^②		
Hip circumference/cm ^①	91.4±6.6	93.8±7.1 ^②	90.9±6.7	93.9±7.3 ^②	165.209	0.000
BMI/(kg·m ⁻²) ^①	23.7±3.1	25.3±3.4 ^②	23.1±3.2 ^②	25.1±3.4 ^②	339.084	0.000

Note: ^①The missing values are not included in the analysis, and the percentages listed in the table are valid percentages that do not include missing values. ^② $P<0.05$, compared with the tumor-free and non-cardiovascular disease group.

表2 上海社区老年人群的日常生活习惯分析

Tab 2 Analysis of daily living habits of Shanghai community elderly cohort

Daily living habit	Tumor-free and non-cardiovascular disease group (n=6 222)	Single cardiovascular disease group (n=10 523)	Single tumor group (n=480)	Tumor cardiovascular disease co-occurrence group (n=723)	χ^2 value	P value
Smoking/n(%) ^①					130.142	0.000
No	4 576 (73.5)	8 140 (77.4) ^②	417 (86.9) ^②	646 (89.4) ^②		
Yes	1 646 (26.5)	2 380 (22.6) ^②	63 (13.1) ^②	77 (10.6) ^②		
Drinking tea/n(%) ^①					12.517	0.006
No	4 578 (73.6)	7 824 (74.4)	378 (78.8) ^②	566 (78.3) ^②		
Yes	1 641 (26.4)	2 695 (25.6)	102 (21.2) ^②	157 (21.7) ^②		
Drinking coffee/n(%) ^①					1.017	0.797
No	5 809 (93.4)	9 853 (93.7)	444 (92.7)	677 (93.6)		
Yes	411 (6.6)	668 (6.3)	35 (7.3)	46 (6.4)		
Drinking carbonated drink/n(%) ^①					8.407	0.033
No	6 180 (99.4)	10 453 (99.4)	470 (98.1) ^②	717 (99.3)		
Yes	39 (0.6)	67 (0.6)	9 (1.9) ^②	5 (0.7)		
Drinking alcohol/n(%)					1.143	0.767
No	5 195 (83.5)	8 767 (83.3)	397 (82.7)	593 (82.0)		
Yes	1 027 (16.5)	1 756 (16.7)	83 (17.3)	130 (18.0)		
Sedentary time/n(%) ^①					69.673	0.000
≤2 h/d	3 392 (54.6)	5 230 (49.8) ^②	238 (49.7) ^②	317 (43.9) ^②		

Continued Tab

Daily living habit	Tumor-free and non-cardiovascular disease group (n=6 222)	Single cardiovascular disease group (n=10 523)	Single tumor group (n=480)	Tumor cardiovascular disease co-occurrence group (n=723)	χ^2 value	P value
3–4 h/d	2 255 (36.3)	4 060 (38.6) ^②	184 (38.4)	296 (41.0) ^②	46.650	0.000
>4 h/d	562 (9.1)	1 216 (11.6) ^②	57 (11.9) ^②	109 (15.1) ^②		
Physical activity level/n(%)					27.736	0.000
Low level	300 (4.8)	618 (5.9) ^②	29 (6.0)	64 (8.9) ^②	27.736	0.000
Middle level	1 973 (31.7)	3 592 (34.1) ^②	176 (36.7) ^②	265 (36.7) ^②		
High level	3949 (63.5)	6 313 (60.0) ^②	275 (57.3) ^②	394 (54.5) ^②		
Sleep quality/n(%) ^①					27.736	0.000
Good	5 172 (83.3)	8 495 (80.9) ^②	381 (79.5) ^②	553 (76.8) ^②	27.736	0.000
Poor	1 038 (16.7)	2 011 (19.1) ^②	98 (20.5) ^②	167 (23.2) ^②		

Note: ^①The missing values are not included in the analysis, and the percentages listed in the table are valid percentages that do not include missing values. ^② $P<0.05$, compared with the tumor-free and non-cardiovascular disease group.

长、体力活动水平和睡眠质量的组间差异具有统计学意义（均 $P<0.05$ ）；其中，与无肿瘤无心血管疾病组相比，心血管疾病单患组、肿瘤单患组及肿瘤心血管疾病共患组患者的吸烟、高体力活动水平的比例较低（均 $P<0.05$ ）；久坐时长 >4 h/d、睡眠质量差的比例较高（均 $P<0.05$ ）。

2.3 上海社区老年人群的既往疾病史及心理状况分析
对4组受试者的既往疾病史及心理状况进行分

析，结果（表3）显示：高脂血症、外周血管疾病、内分泌系统疾病、呼吸系统疾病、泌尿系统疾病、消化系统疾病、焦虑症状和抑郁症状的组间差异具有统计学意义（均 $P=0.000$ ）；其中，与无肿瘤无心血管疾病组相比，心血管疾病单患组、肿瘤心血管疾病共患组患者合并高脂血症、外周血管疾病、内分泌系统疾病、呼吸系统疾病、泌尿系统疾病、消化系统疾病的比例较高（均 $P<0.05$ ），且该2组患者的抑郁、焦虑比例亦较高（均 $P<0.05$ ）。

表3 上海社区老年人群的既往疾病史及心理状况分析

Tab 3 Analysis of past medical histories and psychological status of Shanghai community elderly cohort

Item	Tumor-free and non-cardiovascular disease group (n=6 222)	Single cardiovascular disease group (n=10 523)	Single tumor group (n=480)	Tumor cardiovascular disease co-occurrence group (n=723)	χ^2 value	P value
Hyperlipidemia/n(%)					274.126	0.000
No	5 838 (93.8)	9 042 (85.9) ^②	443 (92.3)	600 (83.0) ^②	274.126	0.000
Yes	384 (6.2)	1 481 (14.1) ^②	37 (7.7)	123 (17.0) ^②		
Peripheral vascular disease/n(%) ^①					69.969	0.000
No	6 139 (98.8)	10 181 (96.8) ^②	472 (98.7)	697 (96.5) ^②	69.969	0.000
Yes	74 (1.2)	333 (3.2) ^②	6 (1.3)	25 (3.5) ^②		
Endocrine system disease/n(%) ^①					490.889	0.000
No	5 160 (83.2)	7 282 (69.3) ^②	397 (82.9)	430 (59.5) ^②	490.889	0.000
Yes	1 045 (16.8)	3 226 (30.7) ^②	82 (17.1)	293 (40.5) ^②		
Respiratory system disease/n(%) ^①					25.046	0.000
No	5 876 (94.7)	9 862 (93.9) ^②	445 (93.1)	651 (90.2) ^②	25.046	0.000
Yes	329 (5.3)	639 (6.1) ^②	33 (6.9)	71 (9.8) ^②		
Urinary system disease/n(%) ^①					34.050	0.000
No	5 980 (96.4)	9 940 (94.6) ^②	455 (95.2)	671 (93.1) ^②	34.050	0.000
Yes	225 (3.6)	568 (5.4) ^②	23 (4.8)	50 (6.9) ^②		
Digestive system disease/n(%) ^①					81.699	0.000
No	4 778 (77.1)	7 478 (71.2) ^②	358 (75.1)	485 (67.4) ^②	81.699	0.000
Yes	1 421 (22.9)	3 021 (28.8) ^②	119 (24.9)	235 (32.6) ^②		

Continued Tab

Item	Tumor-free and non-cardiovascular disease group (n=6 222)	Single cardiovascular disease group (n=10 523)	Single tumor group (n=480)	Tumor cardiovascular disease co-occurrence group (n=723)	χ^2 value	P value
Depression symptom/n(%)					40.660	0.000
No	6 025 (96.8)	10 024 (95.3) ^②	459 (95.6)	670 (92.7) ^②		
Yes	197 (3.2)	499 (4.7) ^②	21 (4.4)	53 (7.3) ^②		
Anxiety symptom/n(%)					27.224	0.000
No	6 106 (98.1)	10 196 (96.9) ^②	465 (96.9)	695 (96.1) ^②		
Yes	116 (1.9)	327 (3.1) ^②	15 (3.1)	28 (3.9) ^②		

Note: ^①The missing values are not included in the analysis, and the percentages listed in the table are valid percentages that do not include missing values. ^② $P<0.05$, compared with the tumor-free and non-cardiovascular disease group.

2.4 上海社区老年人群的膳食达标情况分析

对4组受试者的膳食达标情况进行分析, 结果(表4)显示, 仅蔬菜摄入量在4组中的达标率均超过了50%, 禽肉类、鱼类、水果、液态奶、薯类的达标率均低于20%; 其中, 与无肿瘤无心血管疾病组相比, 心血管疾病单患组患者在禽肉类、鱼类、水果和液态奶的达标率较低(均 $P<0.05$)。

表4 上海社区老年人群的膳食达标情况分析

Tab 4 Analysis of dietary compliance status of Shanghai community elderly cohort

Dietary compliance status	Tumor-free and non-cardiovascular disease group (n=6 222)	Single cardiovascular disease group (n=10 523)	Single tumor group (n=480)	Tumor cardiovascular disease co-occurrence group (n=723)	χ^2 value	P value
Vegetable intake/n(%) ^①					6.881	0.076
<300 g/d	1 906 (31.4)	3 042 (29.7) ^②	149 (32.2)	205 (29.1)		
≥300 g/d	4 156 (68.6)	7 208 (70.3) ^②	314 (67.8)	500 (70.9)		
Poultry intake/n(%) ^①					23.615	0.005
0 g/week	121 (2.0)	199 (1.9)	10 (2.1)	17 (2.4)		
<300 g/week	4 578 (74.9)	8 046 (77.7) ^②	357 (76.1)	540 (75.8)		
300–500 g/week	946 (15.5)	1 468 (14.2) ^②	73 (15.6)	111 (15.6)		
>500 g/week	470 (7.7)	639 (6.2) ^②	29 (6.2)	44 (6.2)		
Fish intake/n(%) ^①					28.426	0.000
0 g/week	147 (2.4)	288 (2.8)	20 (4.3) ^②	14 (2.0)		
<300 g/week	4 985 (81.7)	8 615 (83.4) ^②	392 (83.6)	606 (85.6) ^②		
300–500 g/week	692 (11.3)	1 050 (10.2) ^②	45 (9.6)	67 (9.5)		
>500 g/week	279 (4.6)	378 (3.7) ^②	12 (2.6) ^②	21 (3.0) ^②		
Fruit intake/n(%) ^①					0.000	0.000
0 g/d	585 (9.6)	1 155 (11.2) ^②	29 (6.2) ^②	55 (7.8)		
<200 g/d	5 135 (84.3)	8 625 (83.6)	397 (84.8)	613 (86.7)		
200–350 g/d	340 (5.6)	477 (4.6) ^②	38 (8.1) ^②	33 (4.7)		
>350 g/d	33 (0.5)	59 (0.6)	4 (0.9)	6 (0.8)		
Liquid milk intake/n(%) ^①					28.235	0.000
0 g/d	2 197 (36.0)	4 096 (39.5) ^②	181 (38.3)	242 (34.1)		
<300 g/d	3 618 (59.2)	5 854 (56.5) ^②	269 (57.0)	436 (61.4)		
≥300 g/d	294 (4.8)	418 (4.0) ^②	22 (4.7)	32 (4.5)		
Tubers intake/n(%) ^①					0.000	0.000
0 g/d	1 019 (16.7)	1 891 (18.3) ^②	69 (14.7)	116 (16.3)		
<50 g/d	4 914 (80.6)	8 212 (79.4)	385 (82.1)	575 (80.9)		
50–100 g/d	141 (2.3)	204 (2.0)	14 (3.0)	16 (2.3)		
>100 g/d	25 (0.4)	30 (0.3)	1 (0.2)	4 (0.6)		

Note: ^①The missing values are not included in the analysis, and the percentages listed in the table are valid percentages that do not include missing values. ^② $P<0.05$, compared with the tumor-free and non-cardiovascular disease group.

3 讨论

本研究基于上海社区老年人群队列的基线调查数据,从人口学特征与生理指标、日常生活习惯、既往疾病史、心理状况、膳食达标情况等多方面分析CVD和恶性肿瘤的危险因素的流行特征之间的差异。结果显示:①研究对象中有60.1%的肿瘤患者合并CVD。②心血管疾病、肿瘤和肿瘤心血管疾病共患的人群普遍存在不健康的日常生活习惯。心血管疾病单患组、肿瘤心血管疾病共患组患者中抑郁、焦虑的比例较高。③与无肿瘤无心血管疾病组相比,心血管疾病单患组患者在禽肉类、鱼类、水果和液态奶的达标率均较低。

本研究中,CVD在肿瘤患者中的患病率为60.1%,肿瘤和CVD共患现象普遍存在。值得注意的是,肿瘤患者合并CVD的患病率会因肿瘤类型、治疗阶段及治疗手段等有所差异。一项基于英国国家数据库的研究^[12]显示,非小细胞肺癌患者CVD的患病率最高(36.1%),乳腺癌患者CVD的患病率最低(7.7%)。PATERSON等^[13]发现,与未患癌症的受试者相比,研究期间新诊断的癌症患者发生中风、心力衰竭的风险分别增加了44%和62%。此外,各种抗肿瘤治疗手段(如放射治疗、细胞毒性化学治疗、分子靶向抑制剂和免疫检查点抑制剂等)均可能增加肿瘤患者在治疗期间以及治疗后发生CVD的风险^[14]。有研究^[15]显示,12.5%的接受免疫检查点抑制剂治疗的癌症患者在一年内会出现心脏毒性,其中最常见的是心律失常(9.3%)。

一项针对中老年男性吸烟与CVD风险的研究^[16]发现,吸烟指数 ≥ 40 包年的当前吸烟者较从不吸烟者发生CVD的风险增加49%。一项纳入128 423名癌症患者的研究^[17]发现,有10.9%的患者在罹患癌症后继续吸烟,而39.5%的患者在罹患癌症后戒烟;相较于不吸烟者,仍吸烟的癌症患者预期寿命缩短了5.9年,而已戒烟的癌症患者预期寿命缩短了3.7年。在本研究中,肿瘤单患组、心血管疾病单患组、肿瘤心血管疾病共患组患者的吸烟比例均低于无肿瘤无心血管疾病组,这可能与上述人群在罹患疾病后意识到吸烟的危害性从而戒烟有关。因此,在制定预防策略时,相关部门应特别针对吸烟人群,重点强调戒烟对健康的积极作用。此外,本研究还发现,与无肿瘤无心血管疾病组相比,肿瘤心血管疾病共患组患者久坐

时长 >4 h/d、睡眠质量差的比例高,高体力活动水平的比例较低,与既往研究一致^[18];该研究发现,久坐时长 >6 h/d与缺血性心脏病、糖尿病等多种慢性疾病的高风险相关。一项探究身体活动与睡眠质量联合作用的研究^[19]发现,与高强度体力活动且睡眠质量好的参与者相比,无中至高强度的体力活动且睡眠质量差的参与者发生全因死亡、总CVD和总癌症死亡的风险分别增加了57%、67%和45%。

本研究观察到肿瘤心血管疾病共患组患者的抑郁、焦虑比例较高,该结果与既往研究相一致^[20-24]。上述研究发现,抑郁症患者发生CVD的风险较无抑郁症患者增加1.32倍^[20],焦虑抑郁致癌症风险增加13%^[21],且中风、罹患癌症后患者的焦虑、抑郁倾向也有明显增加^[22-23],而保持积极的心理状态对CVD患者有较大益处^[24]。

本研究中,与无肿瘤无心血管疾病组相比,心血管疾病单患组患者在禽肉类、鱼类、水果和液态奶的达标率均较低,这与既往研究一致^[25]。相关研究发现,慢性炎症与CVD密切相关^[26],而膳食因素在慢性炎症的调控中起着重要的作用^[27-28]。红肉及其加工制品的摄入会诱发慢性炎症^[27],进而增加CVD的患病率和死亡率^[29]。相反,水果和绿叶蔬菜等具有抗炎特性的食物含有的高浓度生物活性化合物(如不饱和脂肪酸、多酚、纤维、植物甾醇、维生素和矿物质),具有抗氧化、抗炎和抗血栓形成作用,有助于延缓CVD的发生和发展^[28]。

本研究基于大规模社区老年人群队列,信息收集较为全面;研究对象来源于上海市4个社区卫生服务中心,具有一定的地区代表性,但也存在一定的局限性。首先,收集的信息基于研究对象自我报告的数据,可能存在一定的回忆偏倚。其次,研究对象均为 ≥ 60 岁的老年人,因此该研究的结果仅在老年人群中具有参考价值。第三,只对年龄、性别等因素开展了单因素分析;后续我们会进一步开展有关协变量的多因素分析,深入探索各影响因素与CVD和肿瘤的关联。第四,基于横断面研究的特征,本研究仅能反映各项因素与肿瘤、CVD之间存在关联,尚无法推导因果关系;同时,由于老年人群可能在患病后改变其生活方式,后续我们将开展进一步的纵向前瞻性研究,随访更新相关信息进行因果关系的验证。

综上所述,肿瘤和CVD在流行病学特征和危险

因素上存在许多重叠。本研究中超过一半的恶性肿瘤患者合并有CVD, CVD、肿瘤、肿瘤心血管疾病共患的患者普遍存在不健康的日常生活习惯。该结果或可为CVD—恶性肿瘤的多学科协防共管提供依据。社区卫生服务中心作为老年人健康管理的主要场所, 应加强开展对老年人群的健康宣教, 进行生活方式干预和心理健康管理, 为CVD、恶性肿瘤患者及其高危人群提供全方位的健康管理服务, 助力提高社区老年人群的整体生活质量。

利益冲突声明/Conflict of Interests

所有作者声明不存在利益冲突。

All authors disclose no relevant conflict of interests.

伦理批准和知情同意/Ethics Approval and Patient Consent

本研究严格遵循《赫尔辛基宣言》, 所涉及的试验均已通过上海交通大学医学院附属仁济医院伦理委员会的审批 (审批号KY2019-101)。研究对象均已签署了知情同意书。

This study strictly adhered to the *Declaration of Helsinki* and was

approved by Ethics Committee of Renji Hospital, Shanghai Jiao Tong University School of Medicine (Approval Letter No. KY2019-101). Consent letters have been signed by the research participants.

作者贡献/Authors' Contributions

闫小响、涂圣贤、张薇、卜军负责研究设计, 蒋惠如、叶梦月、王雅玉、陈潇雨、袁安彩、徐文杰、戴慧敏、陈曦、郑元琦参与了数据收集与整理, 李萍负责数据分析和论文写作, 李萍、陈曦、郑元琦、张薇、卜军参与了论文修改。所有作者均阅读并同意了最终稿件的提交。

The research design was conducted by YAN Xiaoxiang, TU Shengxian, ZHANG Wei and PU Jun. Data collection and collation were conducted by JIANG Huiru, YE Mengyue, WANG Yayu, CHENG Xiaoyu, YUAN Ancai, XU Wenjie, DAI Huimin, CHEN Xi and ZHENG Yuanqi. Data analysis and manuscript writing were performed by LI Ping. The manuscript was revised by LI Ping, CHEN Xi, ZHENG Yuanqi, ZHANG Wei and PU Jun. All the authors have read the last version of paper and consented for submission.

• Received: 2023-09-27

• Accepted: 2024-03-01

• Published online: 2024-05-28

参 · 考 · 文 · 献

- [1] FOREMAN K J, MARQUEZ N, DOLGERT A, et al. Forecasting life expectancy, years of life lost, and all-cause and cause-specific mortality for 250 causes of death: reference and alternative scenarios for 2016-40 for 195 countries and territories[J]. *Lancet*, 2018, 392(10159): 2052-2090.
- [2] 中国心血管健康与疾病报告编写组, 胡盛寿. 中国心血管健康与疾病报告2022概要[J]. *中国循环杂志*, 2023, 38(6): 583-612.
The Writing Committee of the Report on Cardiovascular Health and Diseases in China, HU S S. Report on cardiovascular health and diseases in China 2022: an updated summary[J]. *Chinese Circulation Journal*, 2023, 38(6): 583-612.
- [3] World Health Organization. Noncommunicable Diseases [EB/OL]. [2023-09-16]. <https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases>.
- [4] KOENE R J, PRIZMENT A E, BLAES A, et al. Shared risk factors in cardiovascular disease and cancer[J]. *Circulation*, 2016, 133(11): 1104-1114.
- [5] HERRMANN J. Adverse cardiac effects of cancer therapies: cardiotoxicity and arrhythmia[J]. *Nat Rev Cardiol*, 2020, 17(8): 474-502.
- [6] FLORIDO R, DAYA N R, NDUMELE C E, et al. Cardiovascular disease risk among cancer survivors: the atherosclerosis risk in communities (ARIC) study[J]. *J Am Coll Cardiol*, 2022, 80(1): 22-32.
- [7] BERTERO E, ROBUSTO F, RULLI E, et al. Cancer incidence and mortality according to pre-existing heart failure in a community-based cohort[J]. *JACC CardioOncol*, 2022, 4(1): 98-109.
- [8] BELL C F, LEI X D, HAAS A, et al. Risk of cancer after diagnosis of cardiovascular disease[J]. *JACC CardioOncol*, 2023, 5(4): 431-440.
- [9] 蒋惠如, 李峥, 马卓然, 等. 上海社区老年人群队列心脑血管疾病单患、共患基线情况及生活方式特征[J]. *上海交通大学学报(医学版)*, 2022, 42(3): 282-289.
- [10] 王增武, 陈君石, 高润霖, 等. 基层心血管病综合管理实践指南2020[J]. *中国医学前沿杂志(电子版)*, 2020, 12(8): 1-73.
WANG Z W, CHEN J S, GAO R L, et al. Practise guideline(2020) for integrated management of cardiovascular diseases in primary hospitals[J]. *Chinese Journal of the Frontiers of Medical Science (Electronic Version)*, 2020, 12(8): 1-73.
- [11] 《营养学报》编辑部. 《中国居民膳食指南(2022)》在京发布[J]. *营养学报*, 2022, 44(6): 521-522.
Acta Nutrimenta Sinica Editorial Department. *Dietary guidelines for Chinese residents (2022)* released in Beijing[J]. *Acta Nutrimenta Sinica*, 2022, 44(6): 521-522.
- [12] BATTISTI N M L, WELCH C A, SWEETING M, et al. Prevalence of cardiovascular disease in patients with potentially curable malignancies: a national registry dataset analysis[J]. *JACC CardioOncol*, 2022, 4(2): 238-253.
- [13] PATERSON D I, WIEBE N, CHEUNG W Y, et al. Incident cardiovascular disease among adults with cancer: a population-based cohort study[J]. *JACC CardioOncol*, 2022, 4(1): 85-94.
- [14] TOTZECK M, SCHULER M, STUSCHKE M, et al. Cardio-oncology - strategies for management of cancer-therapy related cardiovascular disease[J]. *Int J Cardiol*, 2019, 280: 163-175.
- [15] LI C H, BHATTI S A, YING J. Immune checkpoint inhibitors-associated cardiotoxicity[J]. *Cancers*, 2022, 14(5): 1145.
- [16] 雷文慧, 何诗琪, 王豪, 等. 中老年男性吸烟状况与心血管疾病发生风险的关联性[J]. *中华疾病控制杂志*, 2019, 23(7): 774-779.
LEI W H, HE S Q, WANG H, et al. Association of smoking status with incident cardiovascular disease in the middle-aged and older male populations[J]. *Chinese Journal of Disease Control &*

- Prevention, 2019, 23(7): 774-779.
- [17] TU H K, YE Y Q, HUANG M S, et al. Smoking, smoking cessation, and survival after cancer diagnosis in 128, 423 patients across cancer types[J]. Cancer Commun, 2022, 42(12): 1421-1424.
- [18] CAO Z, XU C J, ZHANG P J, et al. Associations of sedentary time and physical activity with adverse health conditions: outcome-wide analyses using isotemporal substitution model[J]. EClinicalMedicine, 2022, 48: 101424.
- [19] HUANG B H, DUNCAN M J, CISTULLI P A, et al. Sleep and physical activity in relation to all-cause, cardiovascular disease and cancer mortality risk[J]. Br J Sports Med, 2022, 56(13): 718-724.
- [20] KWAPONG Y A, BOAKYE E, KHAN S S, et al. Association of depression and poor mental health with cardiovascular disease and suboptimal cardiovascular health among young adults in the United States[J]. J Am Heart Assoc, 2023, 12(3): e028332.
- [21] WANG Y H, LI J Q, SHI J F, et al. Depression and anxiety in relation to cancer incidence and mortality: a systematic review and meta-analysis of cohort studies[J]. Mol Psychiatry, 2020, 25(7): 1487-1499.
- [22] WILLIAMS O A, DEMEYERE N. Association of depression and anxiety with cognitive impairment 6 months after stroke[J]. Neurology, 2021, 96(15): e1966-e1974.
- [23] GÖTZE H, FRIEDRICH M, TAUBENHEIM S, et al. Depression and anxiety in long-term survivors 5 and 10 years after cancer diagnosis[J]. Support Care Cancer, 2020, 28(1): 211-220.
- [24] DUBOIS C M, LOPEZ O V, BEALE E E, et al. Relationships between positive psychological constructs and health outcomes in patients with cardiovascular disease: a systematic review[J]. Int J Cardiol, 2015, 195: 265-280.
- [25] FANG Y H, XIA J, LIAN Y Y, et al. The burden of cardiovascular disease attributable to dietary risk factors in the provinces of China, 2002-2018: a nationwide population-based study[J]. Lancet Reg Health West Pac, 2023, 37: 100784.
- [26] PHILLIPS C M, CHEN L W, HEUDE B, et al. Dietary inflammatory index and non-communicable disease risk: a narrative review[J]. Nutrients, 2019, 11(8): 1873.
- [27] 黄慧慧, 刘洋, 闻德亮. 促炎饮食及其相关的多系统疾病研究进展[J]. 中国食品卫生杂志, 2023, 35(11): 1671-1677.
- HUANG H H, LIU Y, WEN D L. Research progress on proinflammatory diet and related multisystem diseases[J]. Chinese Journal of Food Hygiene, 2023, 35(11): 1671-1677.
- [28] BADIMON L, CHAGAS P, CHIVA-BLANCH G. Diet and cardiovascular disease: effects of foods and nutrients in classical and emerging cardiovascular risk factors[J]. Curr Med Chem, 2019, 26(19): 3639-3651.
- [29] JI M X, HONG X F, CHEN M Y, et al. Dietary inflammatory index and cardiovascular risk and mortality: a meta-analysis of cohort studies[J]. Medicine, 2020, 99(20): e20303.

[本文编辑] 邢宇洋

学术快讯

上海交通大学基础医学院钟清、留筱厦课题组合作揭示 ANKFY1-ATG2 介导内体到自噬小体脂质运输的新机制

2024年4月16日,上海交通大学基础医学院病理生理学系钟清、留筱厦课题组在 *Cell Discovery* 在线发表题为 *ANKFY1 bridges ATG2A-mediated lipid transfer from endosomes to phagophores* 的研究论文,发现 ANKFY1 (含有 Ankyrin 重复和 FYVE 结构蛋白1) 可以将自噬相关蛋白 2A (autophagy related 2A, ATG2A) 锚定在内体上,协助 ATG2A 转运内体上的脂质到自噬小体上,从而促进自噬体的膜延伸。该研究阐明了 ATG2A 作为脂质转运过程中的关键蛋白介导内体与自噬体间脂质转运的分子机制,为内体作为自噬体膜来源提供了有力证据。